DANIEL C. REUMAN

Imperial College London
Section of Ecology and Evolution
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Date of Birth: 5 Sept. 1974

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Kingston, KT2 6SH, U.K.
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Research Positions

Visiting Assistant Professor, Rockefeller University, New York, NY: June 2008 – present
Lecturer, Imperial College London, UK: September 2007 – present
Equivalent to a tenure-track Assistant Professor in the U.S.A.
Research Associate, Laboratory of Populations, Rockefeller University, New York, NY: August 2006 – August 2007
Post-doctoral Associate, Laboratory of Populations, Rockefeller University, New York, NY: September 2002 – July 2006
Ph.D. Dissertation, University of Chicago, Chicago, IL: July 1998 – August 2002

Education

Ph.D., Mathematics, University of Chicago, Chicago, IL: July 1998 – August 2002
Supervisor: Professor Robert E. Kottwitz.
M.S., Mathematics, University of Chicago, Chicago, IL: September 1997 – June 1998
B.A., Mathematics, Harvard University, Cambridge, MA: September 1992 – June 1996
Magna Cum Laude.

Publications

G. Woodward, J.P. Benstead, O.S. Beveridge, J. Blanchard, T. Brey, L. Brown, W.F. Cross, N. Friberg, T.C. Ings, U. Jacob, S. Jennings, M.E. Ledger, A.M. Milner, J.M. Montoya, E. O'Gorman, J.M. Olesen, O.L. Petchey, D.E. Pichler, **D.C. Reuman**, M.S. Thompson, F.J.F. van Veen, G. Yvon-Durocher. Ecological networks in a changing climate. *Advances in Ecological Research* In press.

U. Görtz, T.J. Haines, R.E. Kottwitz, **D.C. Reuman**. Affine Deligne-Lusztig varieties in affine flag varieties. 2010. *Compositio Mathematica* 146, 1339-1382.

C. Barnes*, D. Maxwell, **D.C. Reuman**, S. Jennings. Global patterns in predator-prey size relationships reveal size-dependency of trophic transfer efficiency. 2010. *Ecology* 91, 222-232.

J.E. Cohen*, D.N. Schittler, D. Raffaelli, **D.C. Reuman***. Food webs are more than the sum of their tri-trophic parts. 2009. *Proceedings of the National Academy of Sciences* 106, 22335-22340.

E. Nicholson*, G.M. Mace, P.R. Armsworth, G. Atkinson, S. Buckle, T. Clements, R.M. Ewers, J.E. Fa, T.A. Gardner, J. Gibbons, R. Grenyer, R. Metcalfe, S. Mourato, M. Muûls, D. Osborn, L. Peck, **D.C. Reuman**, C. Watson, E.J. Milner-Gulland*. Priority research areas for ecosystem services in a changing world. 2009. *Journal of Applied Ecology* 46, 1139-1144.

M. Boots*, D. Childs, **D.C. Reuman**, M. Mealor. Local interactions lead to pathogen driven change to host population dynamics. 2009. *Current Biology* 19, 1660-1664.

D.C. Reuman, C. Mulder, C. Banašek-Richter, M.-F. Cattin Blandenier, A.M. Breure, H.A. Den Hollander, J.M. Kneitel, D. Raffaelli, G. Woodward, J.E. Cohen. Allometry of body size and abundance in 166 food webs. 2009. *Advances in Ecological Research* 41, 1-44.

D.C. Reuman, J.E. Cohen, C. Mulder. Human and environmental factors influence soil food webs' abundance-mass allometry and structure. 2009. *Advances in Ecological Research* 41, 45-85.

J.E. Cohen*, M. Roig, **D.C. Reuman**, C. GoGwilt. International migration beyond gravity: a statistical model for use in population projections.2008. *Proceedings of the National Academy of Sciences* 105:40, 15269-15274.

D.C. Reuman*, C. Mulder, D. Raffaelli, J.E. Cohen. Three allometric relations of population density to body mass: Theoretical integration and empirical tests in 149 food webs. 2008. *Ecology Letters* 11, 1216-1228.

D.C. Reuman*, R.F. Costantino, R.A. Desharnais, J.E. Cohen. Colour of environmental noise affects the nonlinear dynamics of cycling, stage-structured populations. 2008. *Ecology Letters* 11, 820-830.

D.C. Reuman*, R.A. Desharnais, R.F. Costantino, O. Ahmad, J.E. Cohen*. Power spectra reveal the influence of stochasticity on nonlinear population dynamics. 2006. *Proceedings of the National Academy of Sciences* 103:49, 18860-18865.

The subject of a commentary published concurrently in *PNAS.*
In the top 20 most read papers in *PNAS* online, December 2006.
Favorably reviewed for the Faculty of 1000 (http://www.f1000biology.com).

U. Brose*, T. Jonsson, E.L. Berlow, P. Warren, C. Banašek-Richter, L.-F. Bersier, J.L. Blanchard, T. Brey, S.R. Carpenter, M.-F. Cattin Blandenier, L. Cushing, H.A. Dawah, T. Dell, F. Edwards, S. Harper-Smith, U. Jacob, M.E. Ledger, N.D. Martinez, J. Memmott, K. Mintenbeck, J.K. Pinnegar, B. C. Rall, T. Rayner, **D.C. Reuman**, L. Ruess, W. Ulrich, R.J. Williams, G. Woodward, J.E. Cohen. Consumer-resource body-size relationships in natural food webs. 2006. *Ecology* 87:10, 2411-2417.

U. Görtz, T.J. Haines, R.E. Kottwitz, **D.C. Reuman**. Dimensions of some affine Deligne-Lusztig varieties. 2006. *Annales Scientifiques de l'Ecole Normale Supérieure* 39:3, 467-511.

D.C. Reuman, J. E. Cohen. Estimating relative energy fluxes using the food web, species abundance, and body size. 2005. *Advances in Ecological Research* 36, 137-182. Elsevier, San Diego.

D.C. Reuman, J.E. Cohen*. Trophic links' length and slope in the Tuesday Lake food web with species' body mass and numerical abundance. 2004. *Journal of Animal Ecology* 73, 852-866.

D.C. Reuman. Formulas for the dimensions of some affine Deligne-Lusztig varieties. 2004. *Michigan Mathematical Journal* 52:2, 435-451.

D.C. Reuman. Determining whether certain affine Deligne-Lusztig sets are empty. 2002. arXiv:math.RT/0211434

*Corresponding author, when journal practice included corresponding author identification.

Manuscripts in Preparation or in Review

B. García-Carreras, **D.C. Reuman**. An empirical link between the spectral colour of climate and the spectral colour of field populations in the context of climate change.

A.A. King, S. Ellner, M. Ferrari, B. Kendall, K. Newman, **D.C. Reuman**, P. Rohani. Inference for mechanistic models.

N. Bunnefeld, **D.C. Reuman**, D. Baines, E.J. Milner-Gulland. Interactions between unintentional selective harvesting and ecological processes in a cyclic monomorphic species.

D.C. Reuman, J.E. Cohen. Multi-dimensional spectral mimicry: a method of synthesizing matching vector valued time series with different Fourier spectra.

D. Reuman, H. Gislason, C. Barnes, F Mélin, S. Jennings. The marine diversity spectrum.

G. Yvon-Durocher, J. Reiss, J. Blanchard, B. Ebenman, D. Perkins, **D.C. Reuman**, A. Thierry, G. Woodward, O. Petchey. Across-ecosystem comparisons of size-structure: Methods, approaches, and prospects.

Current and Past Funding

Natural Environment Research Council of the United Kingdom Standard Grant: 2010 – 2013

£516,000 award total, PI Mark Trimmer and other researchers at the Queen Mary University of London received £468,000, co-I Reuman received £48,000 for the theoretical component of the work.

Project title *Predictable feedbacks between warming, community structure and ecosystem functioning: a combined experimental and theoretical approach.*

Natural Environment Research Council of the United Kingdom CASE award: 2009 – 2012

£67,000 competitive award to support a PhD student.

Project title *Ecological and genetic determinants of the expansion of grey squirrel populations in Italy and Britain.*

CASE partner Institute of Zoology provides additional funding.

Microsoft Research: 2009 – 2012

£69,000 and computing equipment from a competitive award to support a PhD student.

Project title *Unifying food web structure and dynamics with metabolic theory: a general and modular computational approach*.

Natural Environment Research Council of the United Kingdom: 2008 – 2011

£55,000 funding to support a PhD student.

Project title *The global effects of climate change on population dynamics.*

Natural Environment Research Council of the United Kingdom: 2007

Participant in a NERC-funded working group on predicting the effects of climate change on natural populations and communities, led by David Hodgson and Frank van Veen.

National Center for Ecological Analysis and Synthesis: 2006 – 2009

Participant in an NCEAS-funded working group on unifying approaches to statistical inference in ecology, led by Aaron A. King and Pejman Rohani.

National Science Foundation: 2005 – 2010

$1,400,000 over five-years from the United States National Science Foundation Division of Mathematical Sciences and the Directorate for Biological Sciences with PI Joel E. Cohen, and Robert A. Desharnais and Robert F. Costantino.

Department of Mathematics, University of Chicago: September 1997 – August 2002

Full graduate tuition fellowship and stipend.

American Rewards for College Scientists: 2000, 2001

Two $5000 merit-based rewards for excellence in graduate studies.

National Science Foundation: 1996

Honorable mention for graduate fellowship.

Press Coverage

J. Palmer. Slimming odds for emperor penguins. 26 January 2009. *BBC News online.* Asked for comments on Jenouvrier *et al.*, Demographic models and IPCC climate projections predict the decline of an emperor penguin population. *Proceedings of the National Academy of Sciences*.

J. Berman. Scientists develop model for predicting international population migrations. 30 September 2008. *Voice of America Online.* Coverage of Cohen *et al.*, International migration beyond gravity: a statistical model for use in population projections.

J. Marshall. Human Migration Patterns Get Global Forecast. 29 September 2008. *Discovery News.* Coverage of Cohen *et al.*, International migration beyond gravity: a statistical model for use in population projections.

R. Twombly. New formula predicts how people will migrate in coming decades. 29 September 2008. *Rockefeller University Newswire.* Coverage of Cohen *et al.*,

International migration beyond gravity: a statistical model for use in population projections.

W. Dunham. New formula helps predict immigration patterns. 29 September 2008. *Reuters.com.* Coverage of Cohen *et al.*, International migration beyond gravity: a statistical model for use in population projections.

R. Twombly. New means of predicting populations more accurately accounts for random influences. 11 December 2006. *Rockefeller University Newswire.* Coverage of Reuman *et al.*, Power spectra reveal the influence of stochasticity on nonlinear population dynamics.

T.G. Benton. Revealing the ghost in the machine: Using spectral analysis to understand the influence of noise on population dynamics. 2006. *Proceedings of the National Academy of Sciences* 103:49, 18387-18388. Commentary on Reuman *et al.*, Power spectra reveal the influence of stochasticity on nonlinear population dynamics.

Research Supervision

PhD Supervisor

Lisa Signorile, Imperial College London, UK: beginning October 2009
Ecological and genetic determinants of the expansion of grey squirrel populations in Italy and Britain.
Second supervisors Chris Carbone, Jinliang Wang, and Tony Sainsbury of the Institute of Zoology.

Lawrence Hudson, Imperial College London, UK: beginning October 2009
Unifying food web structure and dynamics with metabolic theory: a general and modular computational approach.
Second supervisor Rich Williams of Microsoft Research.

Bernardo Garcia Carreras, Imperial College London, UK: October 2008 – present
The global effects of climate change on population dynamics.

Masters Supervisor

Yangchen Lin, Imperial College London, UK, April 2010 – September 2010
The link between maximum likelihood and the forecast accuracy of mechanistic population models.
Yangchen won the Gerald Durrell award for best thesis in his MSc in his year.
Yangchen graduated with Distinction.

Yesim Dodlani, Imperial College London, UK, April 2010 – September 2010
Spatial and temporal scaling of the abundance spectrum.
Yesim graduated with Merit.

Carmen Suriel-Melchor, Imperial College London, UK, April 2010 – June 2010
The effects of climate change on bird population dynamics in North America.

Marco Lusquiños, Imperial College London volunteer, UK, January 2010 - present
Volunteer student, MSc level.

Silvia Antonelli, Imperial College London, UK, April 2010 – September 2010
Modeling the eco-evolutionary dynamics of a temperature-dependent consumer-resource system.
Silvia graduated with Distinction.
Primary supervisor Tim Barraclough.

Oliver Wearn, Imperial College London, UK, April 2009 – September 2009
Extinction debt in the Brazilian Amazon.
Oliver graduated with Distinction.
Became a PhD student at Imperial College London.
Primary supervisor Robert Ewers.

Lawrence Hudson, Imperial College London, UK: April 2009 – September 2009
Dynamics of complex food webs: Empirical verification of models.
Lawrence graduated with Distinction.

Became a PhD student at Imperial College London.

Yajun Sun, Imperial College London, UK: April 2008 – September 2008

Distributions of average species body masses in local community food webs.

Yajun graduated with Merit.

Became a PhD student at the University of Toronto.

Research Mentor for Undergraduates

Andrew Brockman, Imperial College London, UK: April 2010 – June 2010

Are top predators really on top?

Feng Wang, Imperial College London, UK: April 2010 – June 2010

Confidence intervals for population viability analysis.

Thomas Britton, Imperial College London, UK: April 2010 – June 2010

Latitudinal biodiversity gradients.

Edward Stephens, Imperial College London, UK: April 2009 – June 2009

An unwritten future: defining the global water shortage and the multidimensional crisis facing China's national security.

Cai GoGwilt, Rockefeller University, New York, NY: June 2007 – July 2007

Population models with mechanistic stochasticity.

Daniella Schittler, Rockefeller University, New York, NY: September 2006 – February 2007

Emergent properties of tri-trophic interactions and food chains in food webs with abundances and body masses.

PhD Examining and Panel Membership

Internal Examiner, Edwin van Leeuwen, Royal Holloway University of London, UK: 17 July 2008

Progress Review Panel: Diane Lawrence, Imperial College London, UK, 2009 - 2012

Progress Review Panel: Martina DiFonzo, Imperial College London, UK, 2008 – 2011

Progress Review Panel: Maren Rebke, Imperial College London, UK, 2007 – 2010

Internal Examiner, Thomas Ezard, Imperial College London, UK: 13 December 2007

Teaching Experience

Lecturer in Ecology and Evolution, Imperial College London, UK: September 2007 present

Course Director for an MSc in Quantitative Biology: October 2010 start

Responsible for all aspects of this one-year full time MSc course, with co-directors Ivana Gudelj, Tim Coulson, and Rob Beardmore.

Designed the course, with co-directors.

Taught modules on Basic Statistics; Inference for Mechanistic Models; and Complex Communities.

Designed and delivered lectures and practicals and wrote examination questions in:

Ecology, Behavior and Evolution: For first-year undergraduates. 2008-present.

Population and Community Ecology: For third-year undergraduates. 2008-present.

An MSc course in Conservation Science. 2008-present.

An MSc course in Ecology, Evolution, and Conservation. 2008-present.

Advances in Population and Community Ecology: For PhD students. 2008-2010.

Personal Tutor for several students.

Meet periodically with each student.

First point of contact for academic and personal issues.

Volunteer Tutor, DOME project, New York, NY: December 2004 – June 2006

Served as a one-on-one, long term mentor and mathematics tutor.

Lecturer in Mathematics, **University of Chicago,** Chicago, IL: October 1999 – June 2002

Fully responsible for teaching seven undergraduate mathematics courses:

Elementary Calculus I, II: Basic calculus.

Calculus II, III: Introduction to calculus. Taught II twice.
Multivariable Calculus and Linear Algebra: For economics students.

Designed and delivered about 30 lectures over 10 weeks for each course, wrote exams, and supervised teaching assistants.

Math Reasoning Instructor, Johns Hopkins University Center for Talented Youth, Clinton, NY: June 2000 – July 2000

Created and taught an intensive three week course in logic and mathematical reasoning for students of ages 13-15 years. Instructional time was 7 hours daily.

Teaching Fellow in Mathematics, University of Chicago, Chicago, IL: October 1998 – June 1999

Assessed students using homework, taught weekly review, lectured on special topics, and assisted students individually in an Honors Analysis course.

High School Teaching Intern, Casablanca American School, Casablanca, Morocco: August 1996 – June 1997

Fully responsible for teaching high school mathematics and computer science courses:
International Baccalaureate Math Methods (calculus and other topics).
Several computer programming courses for 7-8th grade students.

Created and taught interactive units on Newtonian mechanics, philosophy of math, and electric motor construction, and assisted with instruction of 10-12th grade students.

Teaching Fellow in Mathematics, Harvard University, Cambridge, MA: January 1996 – June 1996, September 1993 – January 1993

Multivariable calculus; Elementary number theory.

Professional service

Subject Editor, Oikos: 2010 – present

Member of the Imperial College Department of Life Sciences Academic Opportunities Committee, 2010 - present

Other peer review:

Nature, PNAS, The American Naturalist, Ecology Letters, Ecology, Journal of Animal Ecology, Proceedings of the Royal Society B, Journal of Theoretical Biology, Oikos, Oecologia, Trends in Ecology and Evolution, Ecosystems, Marine Ecology Progress Series, Mathematical Medicine and Biology, Chronobiology International.

Additional Professional Training

Certificate of Advanced Study in Learning and Teaching, Imperial College London, UK: September 2008 - present

Conferences and Lectures

Lecture, British Ecological Society annual meeting, University of Leeds, 7-9 September 2010

The marine diversity spectrum: Theory and empirical validation.

Invited participant, workshop on Ecosystem-level effects of climate-change-induced phonological shifts, Durham University, 31 August – 2 September 2010

Invited Lecture, Royal Entomological Society technology special interest group, Rothamsted Research, UK, 13 May 2010

The blind men and the elephant: deciphering complex population dynamics using new tools for combining statistical perspectives.

Invited Lecture, Population Under Pressure Workshop, Imperial College London, UK: 26-28 May 2009

Prediction is very difficult, especially about the future.

Invited Lecture, Institute for Mathematical Sciences, Complexity and Networks meeting, Imperial College London, UK: 20 May 2009

Predicting abundance-body mass scaling in local community food webs: Big fierce animals are (usually) rare, but how rare?

Lecture, School of Biological Sciences, Royal Holloway University of London, UK: 18 February 2009

The blind men and the elephant: Deciphering population dynamics by combining statistical perspectives.

Lecture, Institute of Zoology, Zoological Society of London, UK: 9 February, 2009

Predicting abundance-body mass scaling in local community food webs: Big fierce animals are (usually) rare, but how rare?

Lectures, Department of Zoology, University of Florida, Gainesville, FL: 20, 22 January 2009

Lecture 1: *Predicting abundance-body mass scaling in local community food webs: Big fierce animals are (usually) rare, but how rare?*

Lecture 2: *The blind men and the elephant: Deciphering population dynamics by combining statistical perspectives.*

Lecture, Center for Population Biology, Imperial College London, UK: 1 December 2008

Predicting abundance-body mass scaling in local community food webs: Big fierce animals are (usually) rare, but how rare?

Lecture, Department of Biological Sciences, University of East Anglia, Norwich, UK: 10 September 2008

Predicting abundance-body mass scaling in local community food webs: Big fierce animals are (usually) rare, but how rare?

Working group leader, European Science Foundation workshop on Body-size and ecosystem dynamics, Cambridge University, Cambridge, UK: 5-7 April 2008.

Lecture, Center for Population Biology, Imperial College London, UK: 4 February 2008

The blind men and the elephant: Deciphering population dynamics by combining statistical perspectives.

Invited lecture, Department of Animal and Plant Sciences, University of Sheffield, Sheffield, UK: 22 November 2007

The blind men and the elephant: Deciphering population dynamics by combining statistical perspectives.

Invited participant, Natural Environment Research Council working group entitled Predicting the Effects of Climate Change on Natural Populations and Communities, Exeter, UK, April 2007, London, UK, November 2007

Invited participant, National Center for Ecological Analysis and Synthesis working group entitled Unifying Approaches to Statistical Inference in Ecology, Santa Barbara, CA, March 2007, December 2007, June 2008, January 2009

Invited lecture, 91st annual meeting of the Ecological Society of America, Memphis, TN: 6-11 August 2006

Power spectra reveal the interactions among nonlinear population dynamics, stochasticity, and lattice effects.

Invited participant, Gordon Research Conference on the Metabolic Basis of Ecology, Lewiston, ME: 9-14 July 2006

Poster: *Disturbance and fertilization shape diversity, abundance-body-mass relations, and biomass flux in 146 soil food webs.*

Invited lecture, Department of Ecology and Evolutionary Biology, Princeton University, Princeton, NJ: 8 May 2006

Power spectra reveal the interactions among nonlinear population dynamics, stochasticity, and lattice effects.

Invited participant and lecturer, workshop on the analysis of entire networks of ecological interactions, Institute for Scientific Interchange Foundation, Turin, Italy: 11-13 January 2006

Food webs augmented with additional data: Structure and dynamics.

Invited lecture, Department of Biology at Bard College, Annandale-on-Hudson, NY: 17 October 2005

Food webs of the past, present and future: from static community description to predictive tool.

Lecture, International Association for Ecology Ninth International Congress of Ecology, Montreal, Canada: 9 August 2005

Estimating relative fluxes of energy in trophic links using the food web, species abundance, and body size.

Invited lecture, Center for Environmental Research and Conservation, Columbia University, New York, NY: 22 February 2005

Estimating relative fluxes of energy along trophic links using the food web, species abundance, and body size.

Lecture, Rockefeller Research Exchange, Rockefeller University, New York, NY: 17 February 2005

Frequency domain analysis of difference equation models of chaotic beetle population dynamics.

Invited participant and lecturer, International Advancement of Community Ecology Theory workshop in Cork, Ireland: 2-4 September 2004

Co-leader of the working group on trivariate patterns in food webs, and the estimation of energy fluxes.

Lecture: *Estimating relative flux along trophic links using trivariate data*.

Invited participant, Gordon Research Conference on the Metabolic Basis of Ecology, Lewiston, ME: 4-9 July 2004

Poster: *Length, slope and flux for trophic links in the Tuesday Lake food web with body mass and numerical abundance.*

Lecture, Biomathematics Lunchtime Seminar, Courant Institute of Mathematical Sciences, New York, NY: 2 March 2004

Frequency domain analysis of difference equation models of chaotic beetle population dynamics.

Invited participant and lecturer, Northeast Ecology and Evolution Conference, Rutgers University, New Brunswick, NJ: 11-13 April 2003

Lecture: *Testing stochastic models of population dynamics against data using the Fourier Transform.*

Poster: *Links in gourmet food webs: length and slope of links in food webs plotted on body mass versus numerical abundance coordinates.*

Invited participant, NSF/NIH Symposium on Accelerating Mathematical-Biological Linkages, Bethesda, MD: 12-13 February 2003

Invited participant, Santa Fe Institute workshop on Modeling and Simulating Biocomplexity for Mathematicians and Physicists, Santa Fe, NM: 4-9 August 2002

Attended American Mathematical Society Central Sectional Meeting, Ann Arbor, MI: 1-3 March 2002

Awards and Honors

American Rewards for College Scientists, Chicago, IL**:** 2000, 2001

Two annual merit based $5000 rewards for excellence in graduate studies.

CUE Award for excellent teaching, Harvard University, Boston, MA: June 1996

John Harvard Scholarship for Academic Excellence, Harvard University, Boston, MA: June 1996

Prize for an excellent lecture, Undergraduate Math Table, Harvard University, Boston, MA: 1995

Dividing a Square into Triangles.

Professional Memberships

Ecological Society of America, 2004-present.
British Ecological Society, 2008-present.
Full member of Sigma Xi, 2004-present.
Member, Round Table Group network of expert witnesses and consultants.

Other Work Experience

Educational Development Consulting Intern, **Khulisa Management Services,** Johannesburg, South Africa: June 2001 - December 2001

Coordinated a project to choose university centers of specialization in education policy development for the Southern African Development Community, a region of 14 countries.
Developed database systems to streamline government disbursement of grants.
Interacted extensively with clients from the government and non-profit sectors.
Wrote proposals and budgets for long-term projects in response to government tenders.
Conducted fieldwork in schools as part of a five-year monitoring and evaluation project.

Undergraduate Researcher, Research Experience for Undergraduates, Mt. Holyoke College, South Hadley, MA: June 1995 – August 1995

Cryptographic Researcher, Director's Summer Program, National Security Agency, Ft. Meade, MD: June 1994 – August 1994

References

Joel E. Cohen: 212 327 8884
Abby Rockefeller Mauzé Professor of Populations, The Rockefeller University
Professor of International and Public Affairs, Columbia University
Professor of Earth and Environmental Science, Columbia University

Robert E. Kottwitz: 773 702 7100
Professor of Mathematics, University of Chicago

Robert F. Costantino: 520 621 7295
Professor Emeritus of Biological Sciences, University of Rhode Island
Adjunct Professor of Ecology and Evolutionary Biology, University of Arizona

Robert A. Desharnais: 323 343 2056
Professor of Biology, California State University, Los Angeles